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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,685	04/16/2004	Suning Wang	2002-033-03US	8860
7590	11/15/2006		EXAMINER YAMNITZKY, MARIE ROSE	
Carol Miernicki Steeg PARTEQ Innovations Room 1625, Biosciences Complex Queen's University at Kingston Kingston, ON K7L 3N6 CANADA			ART UNIT	PAPER NUMBER
			1774	
DATE MAILED: 11/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/825,685

Applicant(s)

WANG ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 8,9,15,16 and 23-39 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-22 is/are allowed.
- 6) ☒ Claim(s) 1-7,10-14,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 25 Oct 2004, 06 May 2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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1. Applicant's election with traverse in the reply filed on August 29, 2006 is acknowledged. In response to the restriction requirement, applicant elected Group I (claims 1-7, 10 and 19-22). As noted in the restriction requirement, the examiner will examine Groups I, III and IV together, subject to two election of species requirements. In response to the election of species requirement for the compound, applicant elected the compound of formula (1) wherein each of X^1-X^4 is nitrogen, and selected compound (3) as the ultimate species. In response to the election of species requirement for the product/device, applicant elected an electroluminescent device. Claims 1-7, 10-14 and 17-22 read on the elected Groups and species.

Applicant traversed the restriction requirement with respect to the restriction between Groups I, II, III and IV. Applicant did not traverse the restriction requirement with respect to the other Groups set forth in the requirement. Applicant also did not traverse the election of species requirements.

With respect to the traversal for Group II, applicant's arguments are not found persuasive because Group I covers numerous compounds. While the method claims of Group II depend from the broadest Group I claim, the method steps recited in the Group II claims are not capable of synthesizing all of the compounds within the scope of Group I. It is not clear if the subset of compounds made by the method steps recited in the Group II claims can be further treated per unrecited method steps in order to provide the full scope of Group I compounds. It is also not necessary to determine the patentability of the Group II method in order to determine the patentability of the Group I compounds, and vice versa. The requirement with respect to Group II (and Groups for which no traversal is stated) is still deemed proper and is therefore made

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FINAL. The examiner notes that withdrawn process claims will be considered for rejoinder upon allowance of a product claim. See MPEP 821.04(b).

With respect to the traversal for Groups III and IV, these Groups will be examined with Group I as noted above and in the original restriction requirement.

2. Claims 8 and 9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected invention, there being no allowable generic or linking claim.

Applicant timely traversed the restriction requirement with respect to these claims in the reply filed on August 29, 2006.

Claims 16 and 23-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse with respect to these claims in the reply filed on August 29, 2006.

Claims 15 and 32-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse with respect to these claims in the reply filed on August 29, 2006.

3. Regarding the election of species with respect to the Group I compound, the ultimate species selected by applicant (compound (3)) was used as the starting point for search and examination purposes of Groups I, III and IV.

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While some prior art is applied against non-elected species in this action, this action does not represent an examination on the merits of all species within the scope of the examined claims.

4. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The members of the Markush group in claim 10 are set forth in terms of abbreviations and numbers. It is not clear if these abbreviations and numbers are limited to the four compounds of the formulae set forth on pages 14-17 of the specification, or if other compounds might be within the scope of the claimed compound.

5. Regarding claim 2, absent objective evidence to the contrary, all compounds within the scope of present formula (1) as defined in claim 1 are considered to be capable of exhibiting photoluminescence and/or electroluminescence.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun et al. in *Chem. Commun.*, pp. 702-703 (published on Web 02/17/2003).

The compound represented by the second formula in Scheme 1 on p. 702 is a compound of present formula (1) wherein each of X^1 - X^4 is nitrogen, Y is hydrogen, Z is a substituted phenyl, and the substituent on the phenyl is an amino group. This prior art compound meets the limitations of present claims 1-5.

The compound represented by the third formula in Scheme 1 on p. 702 is a compound of present formula (1) wherein each of X^1 - X^4 is nitrogen, Y is an aliphatic group having 2 carbon atoms, Z is a substituted phenyl, and the substituent on the phenyl is an amino group. This prior art compound meets the limitations of present claims 1-7.

8. Claims 1-4, 6, 7, 11-14, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-23777.

A machine translation of the reference is provided with this Office action.

The prior art discloses specific compounds of present formula (1) wherein each of X^1 and X^2 is carbon and each of X^3 and X^4 is nitrogen, Y is a substituted or unsubstituted aryl group or aliphatic group, Z is substituted or unsubstituted phenyl, biphenyl, naphthyl, anthryl, or pyridyl, and the substituent is an aryl group, an alkoxy group, an amino group, a nitrile group, or an aliphatic group. For example, see the four formulae in column 13 of the Japanese language reference, first two formulae in c. 14, the last two formulae in c. 15, the first, second and fourth formulae in c. 16, the four formulae in c. 17, and the first three formulae in c. 18. Each of these

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prior art compounds meets the limitations of the compound of formula (1) as defined in present claims 1-4. The compound of the third formula in c. 18 further meets the limitations of the compound of formula (1) as defined in present claims 6 and 7, with an aliphatic group having 1 carbon atom at the position corresponding to Y.

The prior art teaches that the compounds may be used as an emitter in a light emitting device of the structure required by present claims 17 and 18. The light emitting device is an electroluminescent product within the scope of present claim 13, which may be in the form of a flat panel display device as in present claim 14. For example, see claims 1, 2, 8 and 11, and paragraphs [0001], [0010], [0013], [0016]-[0019], [0046], [0050] and [0051]. The prior art device described in paragraphs [0050]-[0051] meets the limitations of present claims 17 and 18.

With respect to present claims 11 and 12, paragraph [0043] teaches that a polymer binder may be used in combination with the compound, and the polymer binder may be a solvent soluble resin. Paragraph [0044] teaches various methods of forming a layer comprising the compound, and teaches "coating method" in general. Solution coating methods are well-known. It is the examiner's position that the teachings of "coating method" and using solvent soluble resins as binders anticipates a composition comprising the compound, an organic polymer and a solvent.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-4, 6, 7, 11-14, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-23777 as applied to claims 1-4, 6, 7, 11-14, 17 and 18 above, and for the further reasons set forth below.

The prior art discloses various specific examples of compounds of present formula (1) wherein each of X¹ and X² is carbon and each of X³ and X⁴ is nitrogen, and suggests others wherein Y, Z and/or the substituent is other than those of the specific examples. For example, while the prior art does not disclose a specific example of a compound of present formula (1) wherein Z is pyrenyl or quinolinyl, such a compound is clearly suggested by the prior art teachings in paragraph [0018]. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other compounds within the scope of the prior art general formula (1) and similar in structure to the specific compounds disclosed in the prior art with the expectation that such compounds would have similar properties and could be used for the purposes of the prior art.

11. Claims 19-22 are allowed. The prior art does not disclose or suggest the four compounds named in these four claims. US 2004/0209117 A1 to Aziz et al. discloses the compounds of present claims 20 and 22, and claims an electroluminescent device comprising such compounds. However, the Aziz et al. publication is not available as prior art, the Aziz et al. patent application having the same effective U.S. filing date as the present application.

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If the Markush group in claim 10 is limited to the four compounds of the formulae set forth on pages 14-17 of the specification, which are the same compounds as named in claims 19-22, then claim 10 also contains patentable subject matter. The chemical names and/or the formulae should be set forth in claim 10 in place of, or in addition to, the abbreviations so as to avoid any question as to the scope of the claim.

12. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
November 13, 2006



MARIE YAMNITZKY
PRIMARY EXAMINER

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